

# CHAPTER 5

## AUDIOVISUAL EQUIPMENT

### Overview

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#### Introduction

Every command in the Navy has a different requirement for audiovisual presentations. Some commands have elaborate briefing theaters with closed circuit television or computer-assisted telecommunications and Internet, while other commands have only an occasional overhead projector. You need a working knowledge of the operation and basic maintenance of the common types of audiovisual equipment.

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#### Objectives

The material in this chapter enables you to do the following:

- Clean and inspect visual presentation equipment.
  - Identify operator adjustments on visual presentation equipment.
  - Select audiovisual equipment appropriate to a presentation.
  - Set up and maintain a presentation theater.
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## Overview, Continued

### Acronyms

The following table contains a list of acronyms you must know to understand the material in this chapter:

Acronym	Meaning
CBI	Computer Based Instruction
LSP	Long Standard Speed
SP	Standard Speed
VCR	Video Cassette Recorder

### In this chapter

This chapter covers the following topics:

Topic	See Page
Projection Devices	5-3
Audio Devices	5-19
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## Projection Devices

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### Introduction

The most common types of still picture projectors are the opaque, the overhead, and the 35mm slide projector. You need a working knowledge of the operation and the basic maintenance of the common types of projectors.

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### General maintenance

For general maintenance purposes, inspect the projection device well before presentation day to allow time for the repair of any discrepancies. Likewise, pay attention to the following details:

- Check the cleanliness of the lenses and projection stages:
    - clean optical surfaces with a lint-free cloth, a damp chamois, or a lens tissue;
    - clean exterior surfaces with a clean, damp cloth; and
    - clean mirrored or reflective condensers with a camel hair brush.
  - Check the device for worn or frayed electrical cords.
  - Test device operation by running the projector for 5 minutes before actual use to make sure it is working properly.
  - Check the projector to screen distance.
  - Keep a spare bulb available next to the projector.
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## Projection Devices, Continued

### Projector support

Make sure the projector is securely supported so that it will not fall or jiggle during the presentation. The projector should project the image over the heads of the audience without partially projecting it onto the ceiling or floor. Position the projector close enough to the screen to permit even illumination. Make sure the lens projects the image at a 90-degree angle to the projection surface to prevent keystoneing, covered later in this chapter.

Figure 5-1 shows the correct positioning of a projector to prevent keystoneing.

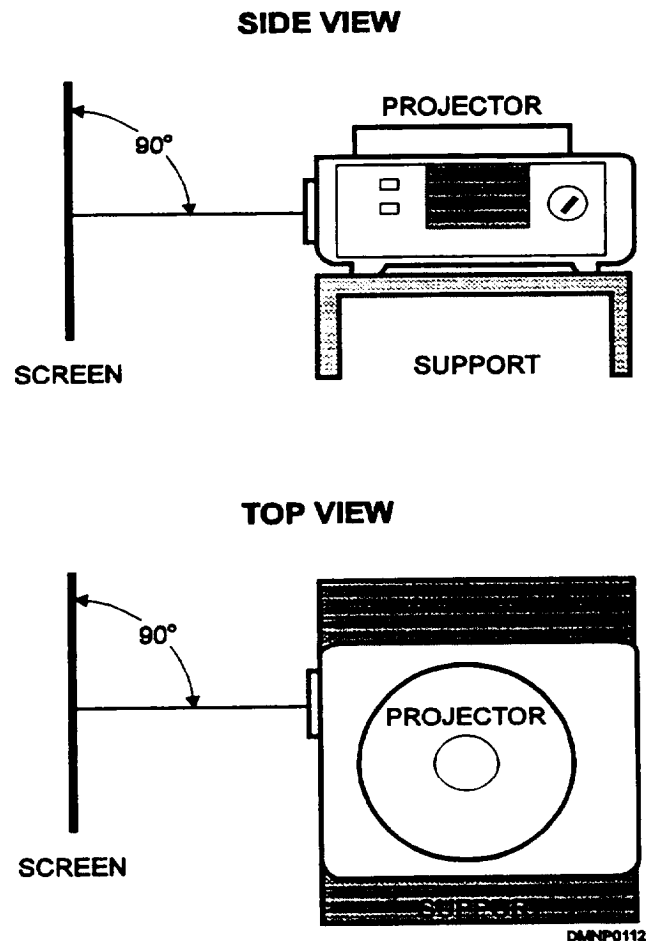


Figure 5-1. —Correct projector angles.

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## Projection Devices, Continued

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### Opaque projectors

An opaque projector reflects light from the surface of an opaque object. Magazines, books, photographs, full-color pictures, charts, and diagrams project onto a screen without additional preparation. An opaque projector will also project any relatively flat object, such as small machine parts, cams, gears, and coins. This projector is often used for teaching, briefing, and as an aid to draftsmen enlarging an image to redraw. Some of the limitations in the use of an opaque projector are its cumbersome size and weight, and it does not illuminate the screen brightly, requiring the elimination of room lights.

Figure 5-2 shows a basic opaque projector.

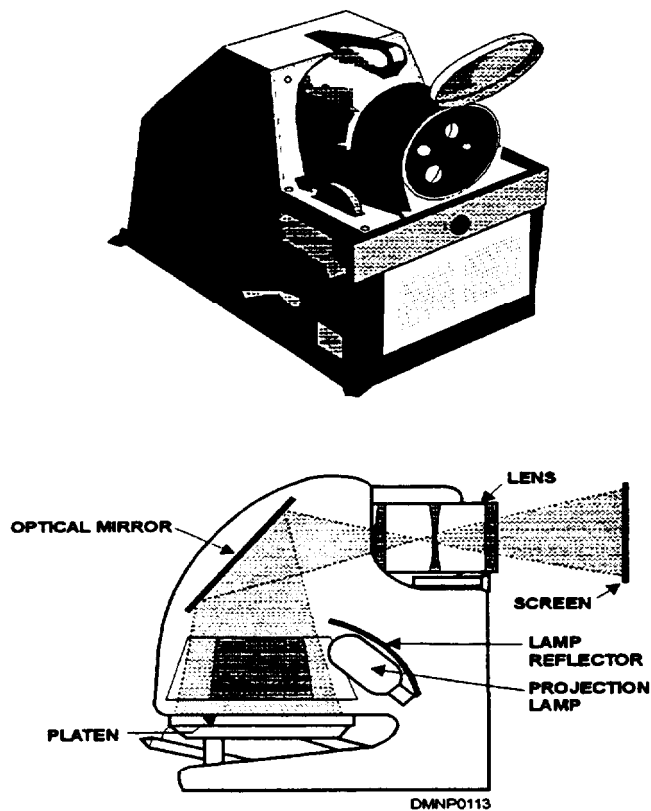


Figure 5-2. —The opaque projector.

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## Projection Devices, Continued

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**Nomenclature**     An opaque projector is an indirect projection system that uses a composite of highly polished mirrored surfaces to reflect light from an object through a lens onto a screen. Other parts of the opaque projector include an on/off switch, a high intensity 1,000 watt bulb, an optical pointer, a focusing knob, a roll feed assembly, a platen assembly, and a fuse holder. Most parts and their functions are self-explanatory except for the roll feed assembly and the platen assembly.

**ROLL FEED ASSEMBLY:** The roll feed assembly works like a conveyor belt to slide objects into the projection platform. Located on the platen assembly, it permits movement from left to right when you turn a hand crank on the side of the machine.

**PLATEN ASSEMBLY:** The platen assembly raises and lowers the projection platform. By raising and lowering the platform, you can project objects up to 1 ½ inches thick. The lock on the platen assembly is spring-loaded; therefore, carefully lock and unlock the platen to prevent the projection platform from snapping up.

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## Projection Devices, Continued

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### Nomenclature (Continued)

Figure 5-3 shows the key elements of an opaque projector.

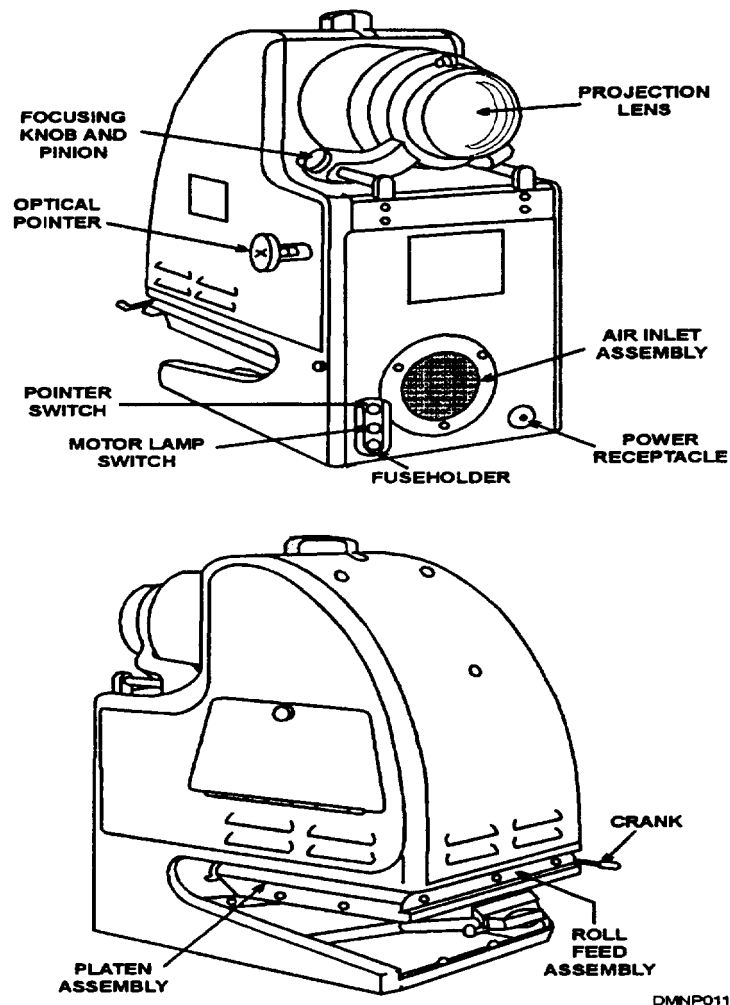


Figure 5-3. —Nomenclature of the opaque projector.

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## Projector Devices, Continued

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### Use

To project flat objects and objects up to 1½ inches thick with the opaque projector, use the following tables:

#### Flat objects

Step	Action
1	Use the roll feed assembly.
2	Stand behind the projector.
3	Hold crank in right hand.
4	Hold copy in left hand, bottom edge toward the screen.
5	Feed material into left side of projector while rotating the crank clockwise.

#### Objects up to 1 ½ inch thick

Step	Action
1	Lower platen assembly to the locked position.
2	Remove the roll feed assembly by lifting it off the platen assembly.
3	Apply continuous pressure to the platen assembly to prevent the projection stage from snapping back into place.
4	Place the object on the platen assembly and slowly raise it into place.

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## Projection Devices, Continued

### Replacing a bulb

To remove and replace a bulb in an opaque projector, use the following tables:

#### To remove bulb

Step	Action
1	Turn off power to device.
2	Allow the lamp to cool down.
3	Press down gently on the bulb.
4	Turn counterclockwise until socket releases bulb.
5	Discard spent bulb.

#### To replace bulb

Step	Action
1	Align lamp ears with matching socket receptacle.
2	Press down gently on the bulb.
3	Turn clockwise until bulb stops.
4	Clean bulb of all fingerprints before turning on projector.

### Overhead projectors

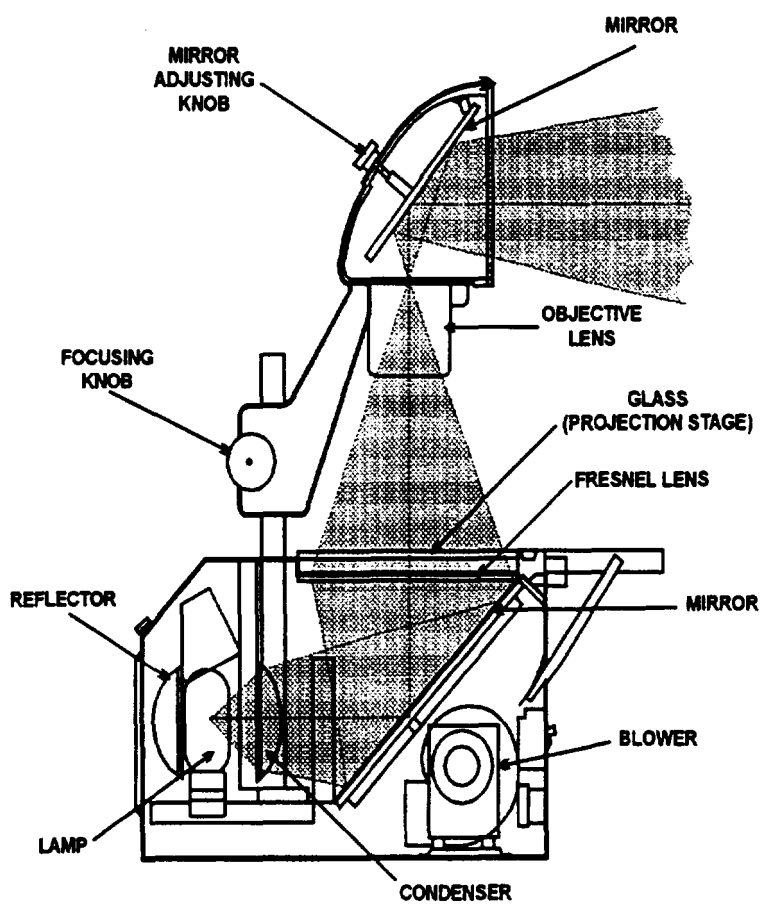
Overhead projectors project light through a transparent visual onto a mirror that reflects that image to a screen. Use an overhead projector for teaching, briefing, and as a draftsman's aid in enlarging or transferring an image to another surface. Major advantages of the overhead projector are portability, being able to write directly on the visuals during projection, and using the projector in dim classrooms. Limitations include a distracting blower motor noise, the visuals must be transparent to project, and the projector requires close placement to the screen.

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## Projection Devices, Continued

**Nomenclature** The overhead projector is a simple device. It consists of a three-position on/off switch, a lamp, a fresnel lens, mirrors, a projection stage, a focusing knob, a blower, and a condenser. The fresnel lens is the key component of an overhead projector. This prismatic lens is a series of concentric circular scribes calculated to concentrate and intensify the light, as it passes through the visual onto a mirror.

Figure 5-4 shows the elements of an overhead projector.



**Figure 5-4. —Overhead projector nomenclature.**

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## Projection Devices, Continued

### Use

To use an overhead projector for front screen projection, place the projectural on the projection stage with the bottom of the projectural facing the screen. The projectural will be legible to the operator. For rear screen projection, place the projectural on the projection stage with the bottom of the projectural facing the screen, but facedown so that the projectural is illegible to the operator. When using an overhead projector, always allow the blower motor to cool the bulb before removing power from the unit.

### Replacing a bulb

Use the following tables to remove and replace a bulb in overhead and portable overhead projectors:

#### To remove bulb

Step	Action
1	Turn off power.
2	Allow lamp to cool.
3	Raise projection stage to gain access to lamp assembly.
4	Release bulb by raising spring clip.
5	Remove bulb and discard.

#### To replace bulb

Step	Action
1	Wipe new bulb with lint-free cloth to remove all hand oils and perspiration.
2	Protect bulb with cloth or wear a lint-free glove when handling.
3	Align socket and insert bulb.
4	Replace spring clip.
5	Close cover.

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## Projection Devices, Continued

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### Portable overhead projectors

Portable overhead projectors are similar to overhead projectors. Portable projectors fold into a self-protecting carrying case. The on/off switch has a third position which allows the blower to remain on after the projector bulb is turned off. Also, the bulb is more intense and has a shorter life. The use and care of a portable overhead projector is the same as for a regular overhead projector.

Figure 5-5 shows a few of the many types of portable overhead projectors available.

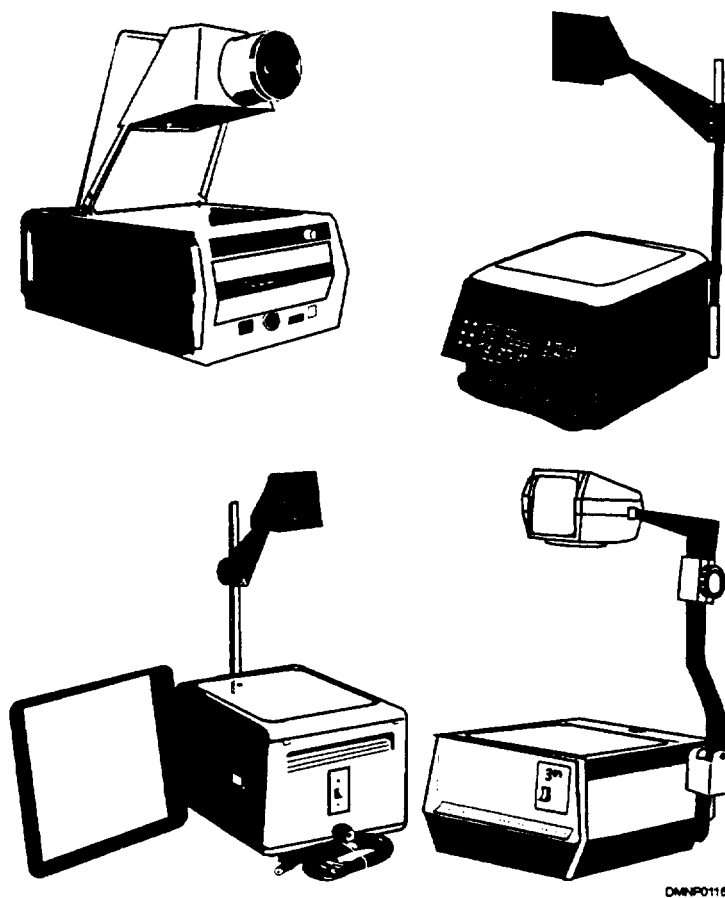


Figure 5-5. —Portable overhead projectors.

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## Projection Devices, Continued

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**Slide projectors** Slide projectors are the most common still picture projectors found in military commands. The operation of slide projectors is simple and universal. These projectors project an image from 35mm or 126mm, slide film in a 2- by-2-inch slide mount. Some projectors can project super slide film in the 127mm format. Slide projectors are used in teaching, briefing, and as a draftsman's aid in enlarging images. The limitations of a slide projector are that the feed mechanism easily jams, and the bulb is very sensitive to rapid temperature fluctuations and perspiration from your hand during handling.

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**Nomenclature** Although the slide projector looks difficult to adjust, its many parts have obvious functions. A slide projector consists of a slide holder, lens, focusing knob, forward/reverse button, on/off button, select button, remote receptacle, dissolve receptacle, timer, and a bulb. Some of these features require further explanation:

**SLIDE HOLDER:** The holder for slides fed into the slide projector is available as a tray that holds from 60 to 180 slides or a stack loader that feeds a stack of slides one at a time into the projector.

**SELECT BUTTON:** Use the select button to select a specific slide in the slide tray. Depress SELECT and spin the tray to align the slide sequence number with the gate. When you release the SELECT button, the desired slide will advance into the gate for projection.

**TIMER:** Use the timer button to select the manual or automatic mode. In manual, the operator has control of the amount of time the slide is on the screen. In automatic, the operator selects the time interval and the projector automatically changes the slide. The timer activates to prompt the projector to change slides and refocus. The choices are in 5-, 10-, and 15-second increments.

**BULB:** The bulb in a slide projector has two levels of illumination. Low illumination is 425 watts. Using the projector bulb at low watt illumination prolongs the life of the bulb. High illumination is 500 watts.

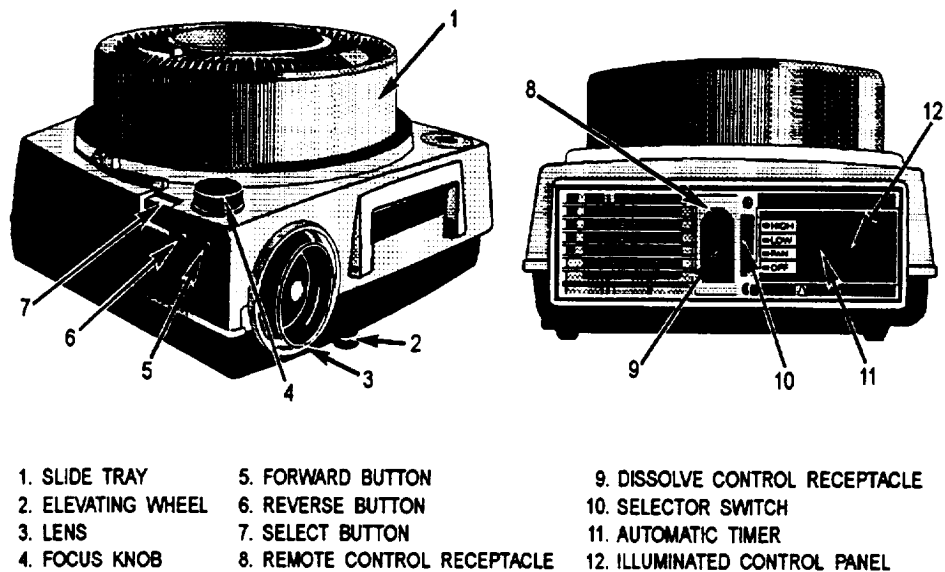
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# Projection Devices, Continued

## Nomenclature (Continued)

Figure 5-6 shows key points of adjustment on a slide projector.



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Figure 5-6. —Slide projector nomenclature.

## Care

Make sure the slide tray or stack loader is firmly seated on the projector. If a slide jams, remove the tray or loader to retrieve it. Before unplugging a slide projector, allow time for the blower to cool the bulb and the motor.

To remove the tray, follow this table:

Step	Action
1	Depress SELECT button and rotate tray to align notched edge.
2	Gently raise tray; do not force tray off.
3	If the tray is difficult to remove, use a coin to turn the slotted screw in the center of the projector.

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## Projection Devices, Continued

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### Replacing a bulb

To replace a bulb or secure the projector, allow the blower motor to cool the bulb before you remove the unit from the power source. To remove and replace a projector bulb, use the following tables:

#### To remove bulb

Step	Action
1	Allow bulb to cool.
2	Turn off power.
3	Open small door to lamp housing.
4	Raise spring clip.
5	Remove bulb and discard.

#### To replace bulb

Step	Action
1	Make sure new bulb is free of hand oils, perspiration, and dirt by wiping with a soft lint-free cloth.
2	Handle bulb carefully, making sure not to touch it with your bare hands.
3	Place bulb in bulb socket.
4	Replace spring clip.
5	Close lamp assembly cover.
6	Run projector with lamp on low setting for 5 minutes before reusing projector.

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## Projection Devices, Continued

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### Slide projector accessories

Slide projectors have many accessories to create a custom system that works for your needs. Slide trays hold slides in sequence, locked into place, in increments from 60 to 180 slides. Stack loaders allow the rapid loading and the easy rearrangement of slides. Remote control cords with connections of varying lengths allow the operator mobility during presentation. These remotes signal the projector to go forward, in reverse, and to power focus. Variable focus lenses are available in long and short ranges to minimize distortion in unusual presentation situations.

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### Dissolve units

One accessory that contributes to a professional presentation is a dissolve unit. Most dissolve units are multi-functioning; that is, they fade an image into black or into another image, or have flashing or overlay capabilities. One or more projectors change an otherwise static presentation into a dynamic display.

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### Programmers

Programmers offer the operator an opportunity to code a series of functions or special effects into their slide presentation. Common special effects programmers include the following:

**AUDIBLE TONE CONTROLLER:** An audible tone controller activates the projector by impulsing a tone. This coded tone signals the projector to do what the operator pre-programs into the device.

**PUNCH TAPE:** Punch tape uses programming logic or electronic circuitry to pierce a paper tape with a code. The code punched onto this tape cues the projector for multiple functions.

**ELECTRONIC MICROPROCESSORS:** Electronic microprocessors digitize information. This “bit” information triggers the programmer’s multiple functions automatically.

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## Projection Devices, Continued

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<b>Projector racks</b>	Make sure slide projectors and programmers or dissolve units are securely mounted to a stable projector rack. Keep all electrical and connector cords from being pinched between devices. Position the projector rack so that the projectors are at a 90-degree angle to the screen and deck to prevent keystoneing. Also consider ventilation, cooling, and access to the projection devices when you position the projector rack.
<b>Video cassette recorders players (VCR)</b>	Video cassette recorders/players (VCR) combine a synchronized audio and video presentation. The operation of a VCR is easy, as many individuals are already familiar with the operation of their home VCR. VCR presentations are excellent for small audiences. When you give a presentation to a large group, hook up several monitors and strategically place them throughout the briefing theater. VCRs require the addition of a television monitor and occasional jams will badly damage a tape.
<b>Nomenclature</b>	<p>Most adjustment points of a VCR are self-explanatory. There is a cassette port, an on/off switch, a forward/fast forward button, a rewind/reverse button, a record button, a playback button, a pause button, a stop/eject button, a speed control switch, and a tracking dial. The two adjustments you may not be familiar with are the speed control switch and the tracking dial.</p> <p><b>SPEED CONTROL SWITCH:</b> This switch allows the operator to switch from standard tape advance speed (SP) to long standard advance speed (LSP). Switching from SP to LSP increases the amount of recording time on a tape.</p> <p><b>TRACK DIAL:</b> An incorrectly tracking tape will chatter, appear out of synchronization, or show distinct horizontal frame lines on the monitor. Adjust the track of the tape by moving the dial until the projected image is steady.</p>
<b>Use</b>	When you use a VCR, make sure the tape is correctly inserted into the cassette port. Take care not to re-record inadvertently over a recorded tape. To make sure a tape is not able to record, break the small plastic tab on the tape cartridge and discard the tab. Occasionally, clean the tape heads with a tape head cleaning tape.

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## **Projection Devices, Continued**

<b>Video projectors</b>	Video projectors are very similar to VCR units. The major difference is that the video projector projects the image onto a screen. The video projector is primarily a teaching device meant for small audiences. One of the drawbacks in using this projector is how easily it slips out of adjustment.
<b>Nomenclature</b>	Video projectors have the same buttons and switches as a VCR with only a few differences. These differences are a projection lens, a focusing ring, and input/output ports to the video cassette player.
<b>Use</b>	Position a video projector so that it is not in a traffic area as this projector easily jars out of alignment. Use a special projection cart, or ideally, mount the projector to the ceiling in a projector rack. The projector has sensitive adjustment dials. A misadjusted projector will project an image that appears to have a ghost or has incorrect coloration. Adjust this projector before actual use by aligning the three primary color dots on the screen until only white light is seen.
<b>Monitors</b>	Monitors are television screens connected to computers or video cassette recorders/players to playback audiovisual tapes. Monitors have the same adjustment features as a television. Use as large a monitor as practicable in the classroom or theater.
<b>Nomenclature</b>	Monitors have an input port, an output port, an on/off switch, a screen face, a color balance control, and a vertical/horizontal hold adjustment dial.
<b>Use</b>	Never force a plug into an input/output port. Monitors are hardy devices that require little care beyond general maintenance and commonsense treatment.

## Audio Devices

<b>Introduction</b>	Audio devices provide sound to a presentation. It may be a narration, sound effects, or music. A presentation is ineffective if an audience cannot hear it.
<b>Cassette decks</b>	Cassette decks provide the dimension of sound to a visual presentation. This music or narration promotes the understanding of the presented material. Cassette tapes are available in 30-, 60-, 90-, and 120-minute increments. You can record information on a cassette tape or use pre-recorded tapes. Some cassette decks require an additional device, called an amplifier, which increases the sound volume before it reaches a set of speakers.
<b>Nomenclature</b>	Cassette decks have an on/off power switch, a play button, a record button, a forward/fast forward button, a rewind/reverse button, a pause button, a stop/eject button, and a tape counter. The tape counter is useful when you are cuing sound at a specific time or interval and monitoring the amount of tape expended.
<b>Use</b>	To record, most cassette players require you to depress the record button simultaneously with the play button. Take care not to re-record over pre-recorded information. To prevent this, break off the small plastic tab on the side of the cassette cartridge. Clean the tape heads with a head cleaning tape or an alcohol solution and cotton swab after 8 hours of play.
<b>Speakers</b>	Speakers transmit sound so that everyone can hear. They use a ground wire and an input wire for connection to a player or amplifier.
<b>Use</b>	Place speakers far enough from the amplifier to prevent feedback or squeal. The speakers should remain in front of and facing the audience. Place them out of the way, preferably mounted on the ceiling.
<b>Care</b>	Keep the front grill of the speaker box. Replace speakers that have been torn or crushed. Damaged speakers distort sound or buzz and are distracting to the audience. Occasionally, disconnect the speaker and expose fresh wire to reconnect to the terminals. Oxidation of the copper core of the wire will cause the speaker to cut in and out.

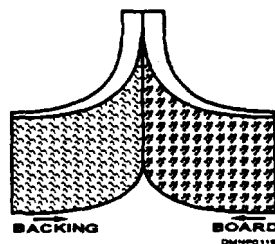
# Multimedia

<b>Introduction</b>	Sometimes one projector is not enough. When a speaker combines different devices or methods of presentation, it becomes a multimedia event.
<b>Multimedia presentations</b>	Multimedia describes presentations that use several different devices or presentation methods to convey information. Another name for multimedia is media integration. This type of presentation combines information presented in a lecture with slide, films, video, transparencies, or other lecture aids. It may be reactive for which the audience sits and listens, or it may be interactive, whereby the audience is participating as well as listening. The point is to use as many of the human senses as possible to increase audience understanding of the material presented.
<b>Computer interactivity</b>	Computers can coordinate the functions of slide projectors, video projectors, and overhead projectors. They cue each device in sequence and provide special effects that create dynamic and professional presentations. Computers can also present information as a projection device by projecting an image onto an overhead screen or for direct viewing from the computer monitor. Software or programs are available that allow you to create a graphics presentation with sound and project or display that presentation in a classroom or briefing environment. Through international electronic hookups, briefings can link commands all over the world for direct and live transmissions.
<b>Computer Based Instruction (CBI)</b>	Future developments to exploit the training and briefing capabilities of computers include computer based instruction (CBI). Command ESOs will receive Navy training material on disks for rapid distribution to the fleet. You will be able to complete training courses at your computer station in the work space. This interactive learning process will have the twofold benefit of improving your computer skills as well as providing immediate feedback on how well you assimilate the lessons taught in the training program.

## Lecture Aids

<b>Introduction</b>	In short, any additional paraphernalia that a speaker uses in the presentation of a program is a lecture aid.
<b>Lectern or podium</b>	A lectern, or podium, focuses the audiences attention on the person delivering the presentation. It also serves to support the speaker's notes for teaching or briefing.
<b>Types</b>	A lectern maybe static, merely a platform the speaker stands behind or near. Lecterns may also be electrified. Lecterns with power options provide the speaker with control over room lights, projection devices, and microphone operation and volume. Some podiums have signal indicators or idiot lights to alert the speaker that the behind-the-scenes crew is experiencing trouble with the presentation.
<b>Care</b>	Keep a lectern clean and in good repair. Do not allow food or drink near the podium, particularly if it is electrified. Place a command logo or Navy emblem on the front of the podium. This may be the first and only impression your command makes on a visiting dignitary or new personnel.
<b>Flannel/felt boards</b>	Flannel/felt boards are large boards covered with felt or flannel material. Lightweight letters and pictures with a slightly abrasive backing stick to the board surface. Use flannel/felt boards for static displays, storytelling, and teaching.

Figure 5-7 shows the abrasive backing on an object used on a flannel board.



**Figure 5-7.**  
—Flannel/felt board  
and backing.

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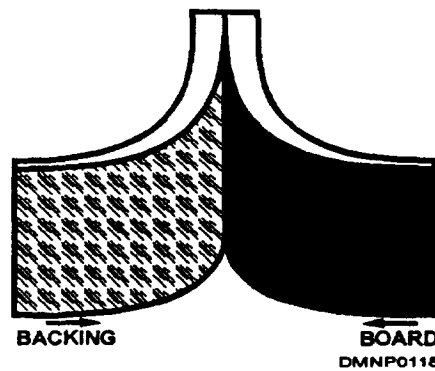
## Lecture Aids, Continued

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### Hook and loop boards

Hook and loop boards are similar to flannel/felt boards. The material used to cover the board is a nylon loop material. The material used to cover the back of the objects to stick to the board is a nylon hook material. Objects used on a hook and loop board may be larger, heavier, or have dimension to them because of the strength in the grip of the hook and loop material. This board is used for displays, storytelling, and teaching.

Figure 5-8 shows an enlargement of hook and loop material.



**Figure 5-8. —Hook-and-loop board and backing.**

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### Marker board/ multipurpose board

Marker boards are slick surfaced boards that are usually white. Use an erasable marker to write or draw on the surface of these boards. Make sure you use the correct type of marker on this board, as common markers will ruin it. Some marker boards will accept magnets which make them more versatile than flannel boards or hook and loop boards. Marker boards are gaining popularity as status boards, in displays, for teaching, and as a spontaneous briefing tool.

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### Chalkboards

Chalkboards are becoming rare with the advent of the marker board, but they are still found in classrooms and briefing theaters for storytelling, teaching, and briefing. Only chalk will mark the slightly abrasive surface of a chalkboard. Chalk is available in many colors, and chalkboards are available in green, grey, or black.

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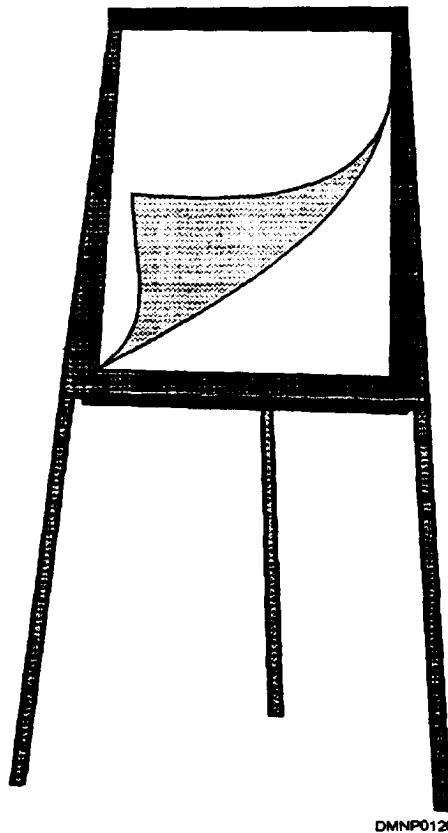
## Lecture Aids, Continued

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### Easels

Use an easel when a lecture or brief is short or requires audience participation. Lecture paper pads fit into the top of an easel and are easily torn off and discarded when you complete the brief. When writing on a lecture pad or drawing a chart or diagram, place an extra sheet of paper between the top paper sheet and the next sheet to prevent the marker ink from bleeding through. Write large and legibly on the lecture pad. Make sure the markers are fresh and full of ink before you address the audience.

Figure 5-9 shows an easel with a lecture pad attached to it.



**Figure 5-9. —An easel with lecture pad paper.**

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## Screens

<b>Introduction</b>	The success of a presentation is greatly dependent on your use of the correct screen in a serviceable condition. In extreme circumstances, however, a light color wall may have to suffice.
<b>Purpose</b>	A screen enlarges the image of a slide or transparency projected on it so that it is legible to an audience. The two types of projection screens are the rear projection, and the front projection screens. Rear projection screens are translucent: therefore, the projector is invisible to the audience as it projects an image through the screen. Front projection screens are reflective and reflect the light image off the screen to the audience.
<b>General care</b>	Keep a screen clean and free of tears. Protect a screen from abuse and stray chalk or pencil marks. Unless it is permanently freed, roll the screen up and store it properly between use.
<b>Rear projection screens</b>	Screens used in rear projection are found most often in permanent theater setups. Many flag staffs have such facilities. Rear screen projection allows the production personnel behind the scenes mobility. It also decreases audience distraction created by the whirling of a projector motor. Most rear projection screens have a matte surface. The image is projected directly on the screen or reflected from large mirrors located behind and at a 45-degree angle to the screen.
<b>Front projection screens</b>	Most front projection screens are the reflective type. The four types of screens used for front projection are the lenticular screen, the high gain aluminum screen, the beaded screen, and the matte screen. Select the type of screen most appropriate to the room dimensions and desired angle of projection. They may be portable units that roll or fold up for storage or permanently freed to a ceiling or wall.
<b>Lenticular screens</b>	Lenticular screens reflect light evenly including all room light and glare. They appear to have a striped, ribbed, rectangular, or diamond pattern, and they have a coating that gives them an enameled, pearlescent, granular, or smooth surface. Lenticular screens have a 70-degree width by 20-degree height angle of projection and are brighter than beaded and matte screens.

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## Screens, Continued

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**High gain aluminum screens**

The high gain aluminum screen is a fill-contrast screen that is six times brighter than any other screen. This is a noncollapsible, slightly concave screen with a grained or patterned aluminum foil laminate. It rejects room light and glare. Use a high gain aluminum screen in a normally lighted room. The angle of projection is 60-degree width by 30-degree height.

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**Beaded screens**

Beaded screens have a very bright image. The image is reflected from a white surface covered with embedded or attached clear glass beads. A beaded screen will reflect all light including stray light and glare. Its 22-degree angle of projection make it useful in long, narrow rooms.

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**Matte screens**

Matte screens appear equally bright from all angles because they diffuse light evenly in all directions. Their dull, matte surface may be dark grey to white in color. They have a 30-degree angle of projection useful in wide, shallow rooms.

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**Selecting a screen**

Before selecting a screen, consider the factors associated with the room you will be using the screen in. Consider the width and length of the room and the size of the audience, and the angle of projection of the screen.

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## Screen, Continued

### Selecting a screen (Continued)

Figure 5-10 illustrates the differing angles of projection for each type of screen.

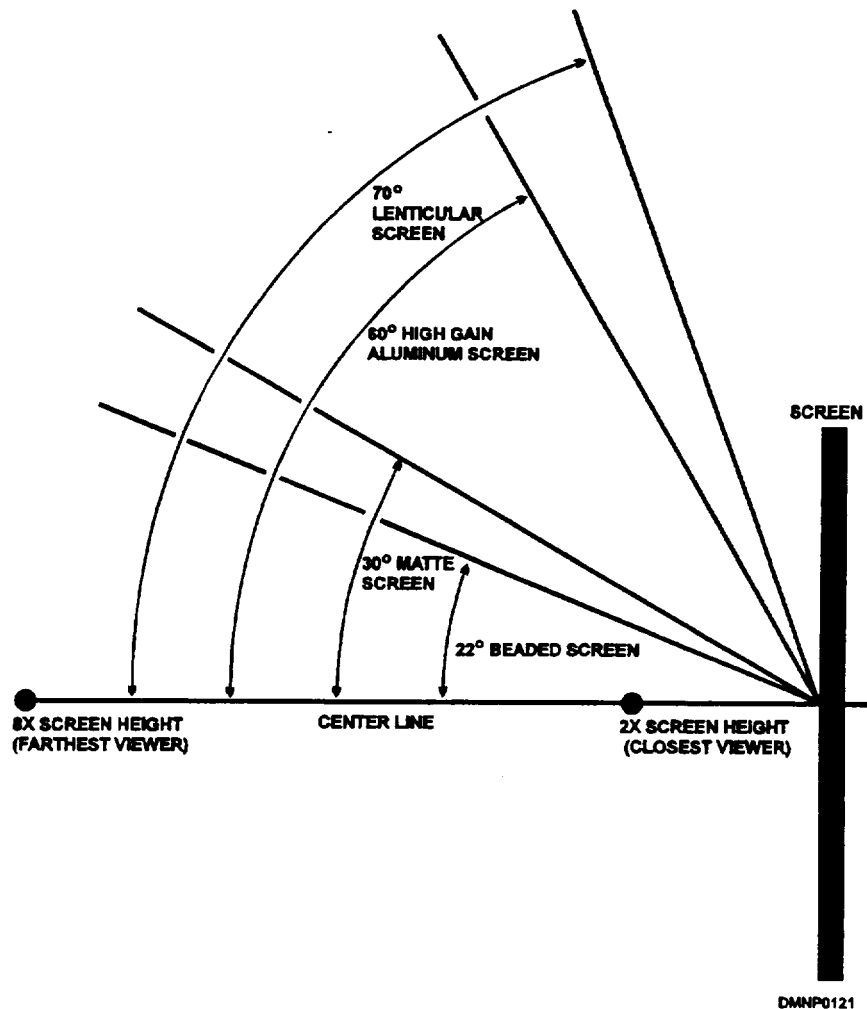


Figure 5-10. —Angle of projection.

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## Screen, Continued

### Screen placement

Consider the room size, the size of the audience, and the location of the windows, the doors, and the speakers before selecting a screen location. Seat the audience no closer than two screen heights from the screen, and no farther than eight screen heights back away from the screen. Position all projectors to project an image over the heads of the audience. To prevent keystoneing, tilt the screen until the distortion disappears.

Figure 5-11 shows the position of the audience and projectors in relation to the screen.

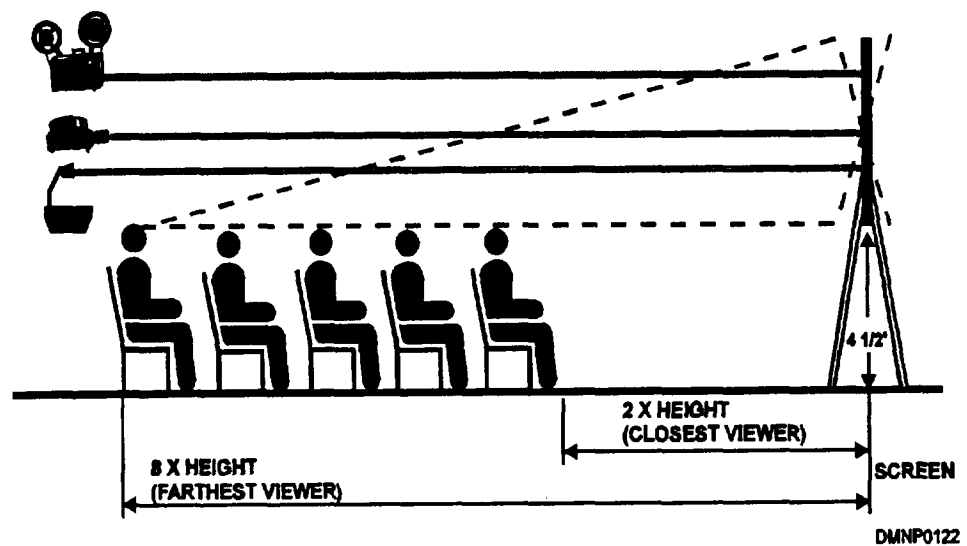


Figure 5-11. —Screen position.

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## Screen, Continued

### Keystoning

Keystoning appears when the projector lens is not perpendicular to the screen or deck. The distorted image appears as a wedge shape. To correct the keystone effect, tilt the screen toward the projector on the end displaying the smallest part of the wedge.

Figure 5-12 shows the keystone effect.

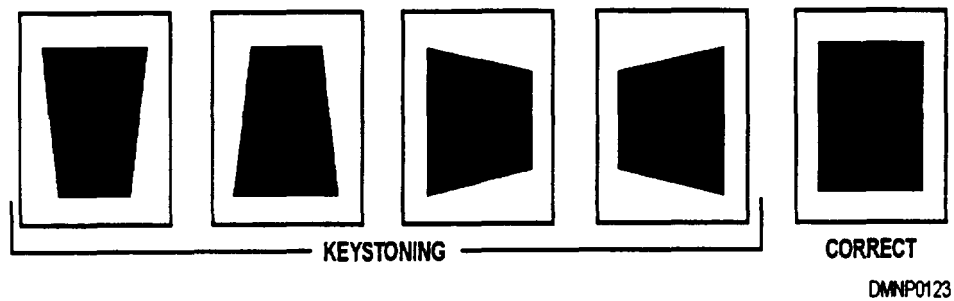


Figure 5-12. —The keystone effect.

## Briefing Theater

<b>Introduction</b>	Nothing is more impressive to an individual than walking into a new command for a presentation and seeing a state-of-the-art presentation theater. It is especially awesome to have the presentation flawlessly executed.
<b>Purpose</b>	Few commands are fortunate enough to have a room specifically designated as a briefing theater. Many commands have conference rooms and classrooms. In each instance, this is a space set aside for the specific purpose of teaching, briefing, meeting, or holding mast. This room warrants special consideration for cleanliness and material condition, as it is sometimes the first and only contact someone may have with a command.
<b>Theater environment</b>	A briefing theater, or any room used as a classroom or conference room, should be quiet both inside and outside. Sound-absorbing material inside the room lessens equipment noise and voices speaking at enhanced volumes. Upholstered furniture, drapes, and carpeting all absorb sound to varying degrees. Prohibit loitering outside the theater and post passageway signs requesting silence. Noise from outside is distracting to those inside the theater trying to concentrate on a speaker.
<b>Temperature</b>	The temperature in the briefing theater should be controllable. Keep the room cool without coldness. Overly warm temperatures lull the audience into slumber. Air should circulate regularly and often, particularly if the theater is full.
<b>Lighting</b>	<p>Use lighting dramatically in the theater. Light the theater in three distinct stages: before the presentation, during the presentation, and after the presentation. Locate lights above the speaker, in front of the screen, over the audience, and in the back of the room. Locate light switches near exits, on the podium, and in the projection booth. Light switches may be on/off switches or dimmer switches.</p> <p>BEFORE THE PRESENTATION: Before the presentation begins, turn the lights on over the audience. Once the audience is seated, the lights over them go out and the lights behind them, in front of the screen, and over the speaker go on.</p>

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## Briefing Theater, Continued

### Lighting (Continued)

**DURING THE PRESENTATION:** After the welcoming of the audience and the introduction of the speaker, the lights in front of the screen are turned off to prevent glare on the screen and interference with the contrast of the projected image. The light on the speaker remains on as does the light in back of the audience. This remaining light slightly lessens the contrast of the projected image reducing eyestrain, providing light for note taking, and creating a social ambience within the theater.

**AFTER THE PRESENTATION:** After the presentation, the lights behind the audience are turned off, the lights above the audience are turned on, the light on the speaker remains on, and the light over the screen remains off.

Figure 5-13 shows the position of lights in the briefing theater.

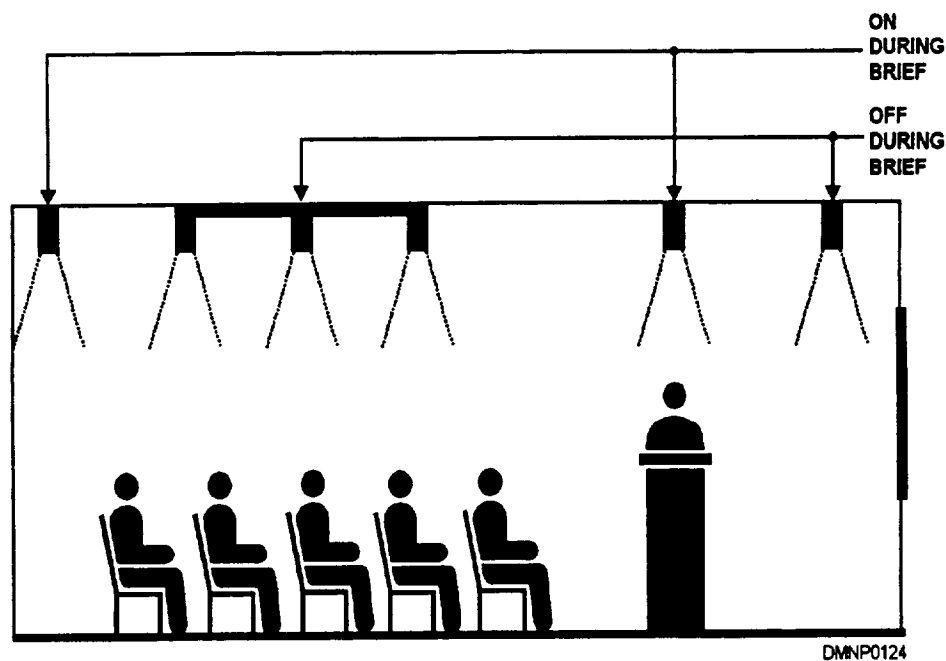


Figure 5-13. —Lights in a briefing theater.

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## **Briefing Theater, Continued**

<b>Speakers</b>	Place the speakers in the theater in front of and facing the audience. Place the speakers as far forward of the lectern as possible to prevent squeal or feedback. Make sure the speaker wire does not present a trip hazard.
<b>Facilities</b>	Make sure the briefing theater, conference room, or classroom is near head facilities. If gedunk machines or a smoker's lounge are nearby, so much the better. Presentations run smoother and on time when breaks are adequate and convenient.
<b>Scheduling</b>	Only one division should be responsible for assigning and scheduling the conference room or briefing theater. Establishing a priority method for scheduling will eliminate conflicts. The individual responsible for scheduling should conduct a pre- and post-presentation inspection for cleanliness and material condition. Discourage loitering and impromptu meetings; keep the presentation room locked when it is not in use. Field day the briefing theater as part of the normal field day routine.
<b>Mechanical environment</b>	The equipment, seating, and type of projection you use in the briefing theater is part of the mechanical environment of the room. Your failure to maintain ready equipment disables the command's ability to communicate.
<b>Equipment</b>	Not only is the type of equipment and its material condition important, but so is the placement of the equipment and how much noise it produces. Select the equipment that best suites the room and audience size. For front projection, position the equipment so that it projects over the heads of the audience. Stagger the projectors in a projection rack to allow multimedia capability. For rear projection, if you have the room, position the projector to project directly onto the screen. If space is limited, reflect the light from a mirrored surface at a 45-degree angle to the screen.

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## Briefing Theater, Continued

### Equipment (Continued)

Figure 5-14 shows equipment positions for front and rear screen projection.

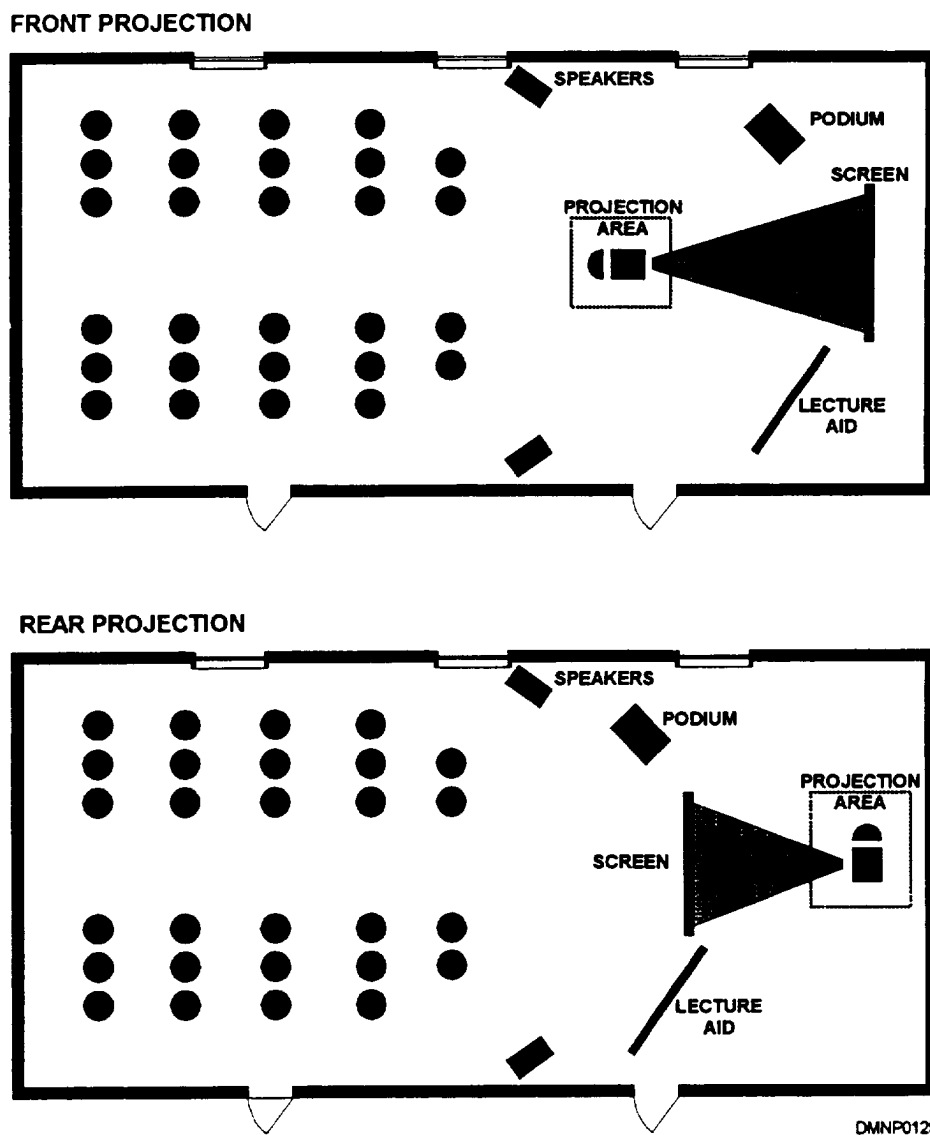


Figure 5-14. —Equipment positions.

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## **Briefing Theater, Continued**

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<b>Seating</b>	Often, the seating type and arrangement already existed before you arrived at the command. Carefully assess the seating in the briefing theater. The audience should be no closer to the screen than twice the screen width and no farther from the screen than eight times the screen width. All seats should be within the purview of the angle of projection for the screen in the briefing theater. Seats should be comfortable without being plush. Seats should face forward except in a briefing theater where the flag staff or dignitary seating should have the ability to rotate.
<b>Lectern</b>	Place the lectern in front of and to one side of the screen. The lectern should not interfere with the audience view of the screen. If the speaker uses any lecture aids, such as an easel or marker board, place them on the opposite side of the room, angled toward the audience, and not obstructing the audience's view of the screen.
<b>Projection area</b>	The area used to setup the projection devices is the projection area. Restrict free movement through this area to minimize trip hazards and possible damage to the machines and machine connections. In some commands, this projection area is an enclosed booth; in others, it is no more than a mobile rack in the back of a room or a projector on the end of a large table.

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## Summary

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### Review

This chapter covers the operation and maintenance of common audiovisual projectors, such as the opaque projector, the overhead projector, and the slide projector and their accessories. It also briefly covers audio devices, video cassette recorders, and video projectors. The topics of screen selection and the set up of a briefing theater or conference room complete this chapter.

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### Comments

One of the most interesting, demanding, and rewarding DM billets is that of a briefing draftsman or draftsman attached to a flag staff. Nowhere else are your professional abilities and customer service skills challenged and scrutinized daily, and nowhere else are your creative talents more highly visible by personnel in the upper echelon. These pressurized billets provide immediate job satisfaction in the form of a daily summary or conference. Another rewarding duty is at a teaching or educational command. Good students quickly spot poor graphics or illogically planned visuals. Poor visuals and poorly presented visuals distract, irritate, and impair communication. Understand what you are illustrating. Understand the effect your artwork has in the long haul. Know how to best communicate the message. If you do not, you have missed the point of visual communication. Think about the message the visual must convey and the method of presentation before creating the visual.

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